

REMARKS

Claim Status

In the Office action issued on August 25, 2010 (the “Office Action”):

- claims 25, 28, 30, 32, 33, 37 and 40 were rejected under 35 U.S.C. §103(a) as being obvious in light of US Patent No. 5,530,846 to Strong (“Strong”) in combination with EP Patent Application No. EP 0946003 to Lian (“Lian”);
- claim 29 was rejected under 35 U.S.C. §103(a) as being obvious in light of Strong and Applicants’ admitted prior art (referred to as “AAPA”;
- claims 31, 42 and 43 were rejected under 35 U.S.C. §103(a) as being obvious in light of Strong and Lian and in further view of US Patent No. 6,275,544 to Aiello (“Aiello”);
- claims 34 and 41 were rejected under 35 U.S.C. §103(a) as being obvious in light of Strong and Lian and in further view of US Patent No. 6,678,781 to Domon (“Domon”);
- claim 35 was rejected under 35 U.S.C. §103(a) as being obvious in light of Strong and Lian and in further view of “Application Critical Parameters for Rubidium Standards” by Weidmann (“Weidmann”); and
- claim 36 was rejected under 35 U.S.C. §103(a) as being obvious in light of Strong and Lian and in further view of US Patent No. 6,370,138 to Kim (“Kim”).

In this response, Applicants have amended claims 25 and 37. After entry of this amendment, claims 25, 28–37, and 40–44 will be pending, including independent claims 25 and 37. Support for the amendments may be found at least at paragraph [0026] of the application as published. No new matter has been added.

Rejection of Claims 25 and 37 Under 35 U.S.C. §103(a)

Independent claim 25 recites, in part, “distributing a reference time in a network having a plurality of nodes” by, in part, “generating a network-wide time signal using a reference time generator,” “distributing the network-wide time signal over the network to the plurality of nodes wherein each node is configured to generate different synchronization signals for different

applications connected thereto,” “measuring a signal propagation delay . . . between the reference time generator and each of the plurality of nodes,” “determining the signal propagation delay at each respective node from the difference between the respective local cycle master and the network cycle master,” “generating local synchronization signals” each of which “being required by a respective application” and “synchronizing the timing of each node for the respective applications using the respective local synchronization signals.”

Likewise, independent claim 37 recites, in part, “a network including a plurality of nodes and a reference time generator for generating a network-wide time signal” wherein “each node of the plurality of nodes of the network has means adapted to generate different synchronization signals for different respective applications connected thereto and measure a signal propagation delay of the network-wide time signal between the reference time generator and each node,” “determine a respective signal propagation delay at each respective node from the difference between the respective local cycle master signal and the network cycle master signal” and can “synchronize the timing of each node for the respective applications using the local synchronization signals.” None of the cited references teach or suggest using the difference between a “local cycle master signal” and a “network cycle master signal” to determine signal propagation delays that are used to synchronize multiple applications connected to node in a distributed system.

Strong, in brief summary, describes “accommodating frequent discrete clock synchronization adjustments” between two distinct logical clocks by “decoupling synchronization from amortization” and having a “second logical clock” that “operates as a slave to the first.”¹ And while the Examiner suggests that “Strong teaches . . . generating, at each respective node, a local synchronization signal using the measured signal propagation delay of the respective node, as required by a respective application”² there is no reference to any such teaching in Strong. Strong may, arguably describe synchronizing a “local node clock by transferring a measure of propagation delay”³ but certainly does not teach or suggest using any measured propagation delay to generate multiple local synchronization signals that may be used to synchronize multiple applications connected to a node, as claimed.

¹ Strong, column 3, lines 56-62.

² Office Action, pp. 2-3.

³ Strong, column 2, lines 22-23.

Lian fails to cure the deficiencies of Strong. Lian is directed generally to “a method of determining propagation-delay changes in the send-and-receive transmission paths connecting two communication units.”⁴ While Lian does calculate an approximated total propagation delay by subtracting a first receive time (tB1) from a transmit time (tA1)⁵, such the “propagation delay” calculated in Lian is not used to determine local synchronization signals that may be used to synchronize multiple applications connected to a node, as claimed.

For the foregoing reasons, Applicants respectfully submit that the combination of Strong and Lian does not render independent claims 25 or 37 as obvious. Further, each of the dependent claims may include additional features that further distinguish embodiments of the invention from the cited references.

Likewise, none of the references used to reject the dependent claims (AAPA, Aiello, Domon, Weidmann, or Kim) teach or suggest this feature.

⁴ Lian, Abstract.

⁵ Lian, Paragraphs [0009] – [0010].

CONCLUSION

In light of the foregoing, Applicants respectfully submit that all claims are now in condition for allowance. Applicants believe that no fees are necessitated by the present paper. However, in the event that any fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 07-1700.

If the Examiner believes that a telephone conversation with Applicants' attorney would expedite allowance of this application, the Examiner is cordially invited to call the undersigned.

Respectfully submitted,

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